What Is Claimed Is:

1. A method for measuring the thickness of a thin film, comprising the steps of:

irradiating white light onto the surface of a sample whereon an optically transparent thin film is formed, during polishing;

detecting the reflected light generated by said sample due to the irradiation of said white light; and

determining the thickness of said optically transparent film, by using information for the spectral waveform of the reflected light thus detected;

wherein, in said step of detecting the reflected light, the reflected light is detected from regions determined on the basis of a previously measured film thickness distribution.

2. A method for measuring the thickness of a thin film, comprising the steps of:

irradiating white light onto the surface of a sample whereon an optically transparent thin film is formed, during polishing;

detecting the reflected light generated by said sample due to the irradiation of said white light; and

determining the thickness of said optically transparent film, by using information for the spectral waveform of the reflected light thus detected;

wherein, in said step of determining the film thickness, the film thickness is determined by using information for the spectral waveform of the reflected light from prescribed regions, on the basis of a characteristic quantity of the spectral waveform of the reflected light generated by said sample.

3. The method for measuring the thickness of a thin film according to claim 2, wherein the characteristic quantity of the spectral waveform of said reflected light is based on the reflection intensity of the spectral waveform of said reflected light.

4. The method for measuring the thickness of a thin film according to claim 2, wherein the characteristic quantity of the spectral waveform of said reflected light is based on the frequency spectrum intensity of the spectral waveform of said detected reflected light.

5. The method for measuring the thickness of a thin film according to claim 2, wherein the characteristic quantity of the spectral waveform of said reflected light is the similarity of the spectral waveform based on a previously measured film thickness distribution.

6. The method for measuring the thickness of a thin film according to claim 2, wherein said prescribed regions are determined using information such as said spectral waveform, or the reflectivity of the surface of said sample with respect

to said white light, or the frequency spectrum in said spectral waveform, or the like.

7. A method for measuring the thickness of a thin film, comprising the steps of:

irradiating white light onto the surface of a sample whereon an optically transparent thin film is formed, during polishing;

detecting the reflected light generated by said sample due to the irradiation of said white light, by time division; and

determining the thickness of said optically transparent film at prescribed regions of the surface of said sample, by using information for a characteristic quantity of the spectral waveform of the reflected light thus detected by time division.

8. The method for measuring the thickness of a thin film according to claim 6, wherein the characteristic quantity of the spectral waveform of said reflected light is based on the reflection intensity of the spectral waveform of said reflected light.

9. The method for measuring the thickness of a thin film according to claim 6, wherein the characteristic quantity of the spectral waveform of said reflected light is based on the frequency spectrum intensity of the spectral waveform of said detected reflected light.

10. The method for measuring the thickness of a thin film according to claim 6, wherein the characteristic quantity of the spectral waveform of said reflected light is the similarity of the spectral waveform based on a previously measured film thickness distribution.

11. The method for measuring the thickness of a thin film according to claim 6, wherein the prescribed regions of the surface of said sample are determined using information such as said spectral waveform, or the reflectivity of the surface of said sample with respect to said white light, or the frequency spectrum in said spectral waveform, or the like.

12. A method for measuring the thickness of a thin film, comprising the steps of:

irradiating white light onto the surface of a sample whereon an optically transparent thin film is formed, during polishing;

detecting the reflected light from prescribed regions of said sample, from the reflected light generated by said sample due to the irradiation of said white light; and

determining the thickness of said optically transparent film, by using information for a characteristic quantity of the spectral waveform of the reflected light from the prescribed regions thus detected;

13. The method for measuring the thickness of a thin film according to claim 12, wherein the information for a characteristic quantity of the spectral waveform of said

reflected light is information for the reflection intensity of the spectral waveform of said reflected light.

14. The method for measuring the thickness of a thin film according to claim 12, wherein the information for a characteristic quantity of the spectral waveform of said reflected light is information for the frequency spectrum intensity of the spectral waveform of said detected reflected light.

15. The method for measuring the thickness of a thin film according to claim 12, wherein the information for a characteristic quantity of the spectral waveform of said reflected light is information for the similarity of the spectral waveform based on a previously measured film thickness distribution.

16. The method for measuring the thickness of a thin film according to claim 12, wherein said prescribed regions on the surface of said sample are determined using information such as said spectral waveform, or the reflectivity of the surface of said sample with respect to said white light, or the frequency spectrum in said spectral waveform, or the like.

17. A method for measuring the thickness of a thin film, comprising the steps of:

irradiating white light onto the surface of a sample whereon an optically transparent thin film is formed, during polishing, whilst supplying an optically transparent fluid on the surface of the sample;

detecting the reflected light generated by said sample due to the irradiation of said white light; and

determining the thickness of said optically transparent film by using information for the spectral waveform of the reflected light thus detected.

18. The method for measuring the thickness of a thin film according to claim 17, wherein the thickness of said optically transparent film is determined using information for the reflection intensity of the spectral waveform of said reflected light.

19. The method for measuring the thickness of a thin film according to claim 17, wherein the thickness of said optically transparent film is determined using information for the frequency spectrum intensity of the spectral waveform of said reflected light.

20. A method for measuring the thickness of a thin film, comprising the steps of:

irradiating white light onto the surface of a sample whereon an optically transparent thin film is formed, during polishing;

detecting the reflected light generated by said sample due to the irradiation of said white light, by means of an optical glass having a similar index of refraction to that of the polishing fluid; and

determining the thickness of said optically transparent film, on the basis of the spectral waveform of the reflected light thus detected.

21. The method for measuring the thickness of a thin film according to claim 20, wherein the thickness of said optically transparent film is determined using information for the reflection intensity of the spectral waveform of said reflected light.

22. The method for measuring the thickness of a thin film according to claim 20, wherein the thickness of said optically transparent film is determined using information for the frequency spectrum intensity of the spectral waveform of said reflected light.

23. A device for measuring the thickness of a thin film, comprising:

means for irradiating white light onto the surface of a sample whereon an optically transparent thin film is formed, during polishing;

detecting means for detecting the reflected light generated by said sample due to the irradiation by said irradiation means;

investigation region setting means for setting regions for determining the thickness of said optically transparent film, by using the information of any one of the spectral waveform of the reflected light detected by said detecting means, the reflectivity of the surface of said

sample with respect to said white light, or the information for the frequency spectrum of said spectral waveform; and

film thickness calculating means for calculating the thickness of said optically transparent film by using information for the spectral waveform of the reflected light from the regions set by said investigation region setting means.

24. The device for measuring the thickness of a thin film according to claim 23, wherein said film thickness calculating means determines the thickness of said optically transparent film by using information for the reflection intensity in the spectral waveform of said reflected light.

25. The device for measuring the thickness of a thin film according to claim 23, wherein said film thickness calculating means determines the thickness of said optically transparent film by using information for the frequency spectrum intensity in the spectral waveform of said reflected light.

26. A device for measuring the thickness of a thin film, comprising:

means for irradiating white light onto the surface of a sample whereon an optically transparent thin film is formed, during polishing;

detecting means for detecting the reflected light generated by said sample due to the irradiation said irradiation means;

investigation region setting means for setting detection regions for determining the thickness of said optically transparent film, on the basis of the spectral waveform of the reflected light detected by said detecting means;

means for extracting a characteristic quantity of the spectral waveform of the reflected light generated by the detection regions on said sample as set by said investigation region setting means; and

film thickness calculating means for calculating the thickness of said optically transparent film at said detection regions on the basis of said characteristic quantity.

27. The device for measuring the thickness of a thin film according to claim 26, wherein said film thickness calculating means determines the thickness of said optically transparent film by using information for the reflection intensity of the spectral waveform of said reflected light.

28. The device for measuring the thickness of a thin film according to claim 26, wherein said film thickness calculating means determines the thickness of said optically transparent film by using information for the frequency spectrum intensity of the spectral waveform of said reflected light.

29. A device for measuring the thickness of a thin film, comprising:

means for irradiating white light onto the surface of a sample whereon an optically transparent thin film is formed, during polishing;

detecting means for detecting the reflected light generated by said sample due to the irradiation by said irradiation means;

measurement region setting means for setting regions for determining the thickness of said optically transparent film, on the basis of the spectral waveform of the reflected light detected by said detecting means;

characteristic quantity extracting means for extracting a characteristic quantity of a plurality of spectral waveforms of the reflected light by detecting, by time division, the reflected light from the regions set by said measurement region setting means; and

film thickness calculating means for calculating the thickness of said transparent film, at the regions for determining said film thickness, by using information for the characteristic quantity extracted by said characteristic quantity extracting means.

30. The device for measuring the thickness of a thin film according to claim 29, wherein said characteristic quantity extracting means extracts information for the reflection intensity of a plurality of spectral waveforms of said reflected light, as the characteristic quantity for the plurality of spectral waveforms of the reflected light.

31. The device for measuring the thickness of a thin film according to claim 29, wherein said characteristic quantity extracting means extracts information for the frequency spectrum intensity of a plurality of spectral waveforms of said reflected light, as the characteristic quantity for the plurality of spectral waveforms of the

incomplete